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Attorney Docket No. 21486-028



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Hugh S. Keeping

SERIAL NUMBER: 09/507,239

EXAMINER: Not Yet Assigned

FILING DATE: February 18, 2000

ART UNIT: 1633

FOR: TREATMENT FOR BONE DISORDERS

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July 3, 2001

Boston, Massachusetts

Assistant Commissioner for Patents
Washington, D.C. 20231

TRANSMITTAL LETTER

Transmitted herewith for filing in the present application are the following documents:

- ☒ Information Disclosure Statement (1 pg.);
- ☒ PTO Form 1449 (3 pgs.);
- ☒ Copy of references cited; and
- ☒ Return postcard.

Applicant believes that no fees are due with this submission; however, the Commissioner is hereby authorized to charge any fees that may be due to Deposit Account No. 50-0311, Reference No. 21486-028. A duplicate copy of this Transmittal Letter is enclosed.

Respectfully submitted,

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Modified Form 1449

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Application Number	09/507,239
Filing Date	February 18, 2000
First Named Inventor	Hugh S. Keeping
Group Art Unit	1633
Examiner Name	J. Kerr
Attorney Docket Number	21486-028

U.S. PATENT DOCUMENTS

Exam Initials	Cite No.	U.S. Patent Document No.	Issue Date	Name of Patentee(s) or Applicant(s)	Class	Sub Class	Filing Date If Appropriate
AK	AA	6,020,343	02/01/00	Belley et al.	514	309	
	AB	5,714,146	03/03/98	Lewis et al.	424	130	
	AC	5,246,700	09/21/93	Yamaguchi et al.	424	85.2	
	AD	5,679,338	10/21/97	Yeh et al.	424	85.2	
	AE	5,494,662	03/27/96	Kohji et al.	424	85.2	
	AF	5,772,993	06/30/98	Chung et al.	424	93.6	

FOREIGN PATENT DOCUMENTS

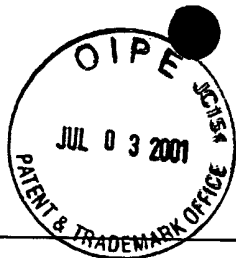
Exam Initials	Cite No.	Foreign Patent Document Office Number	Name of Patentee(s) or Applicant(s)	Date of Publication	Translation Yes No
AK	BA	WO 99/47177	Helm et al.	09/23/99	
	BB	WO 97/47744	Shanafelt et al.	12/18/97	
	BC	WO 93/10235	Boeters et al.	05/27/93	X
	BD	WO 93/21308	Lakkis et al.	10/28/93	

OTHER NON PATENT LITERATURE DOCUMENTS

Exam Initials	Cite No.	Name of Author, Title (when appropriate), Publication, Volume, Page(s), Date, Etc.
AK	CA	Alden et al., "Percutaneous Spinal Infusion Using Bone Morphogenetic Protein-2 Gene Therapy", Journal of Neurosurgery, January 1999, Vol. 90, pgs. 109-114.
	CB	Chambers et al., 1992, J. Immunol., "Long Term Expression of IL-4 In Vivo Retroviral-Mediated Gene Transfer", 149: 2899-2905
	CC	Cheon et al., "Chemogene Therapy: Osteocalcin Promoter-Based Suicide Gene Therapy in Combination with Methotrexate in a Murine Osteosarcoma Model", Cancer Gene Therapy, 1997, Vol. 4, No. 6, pgs. 359-365.
	CD	Ebisawa et al. "Characterization of bone morphogenetic protein-6 signaling pathways in osteoblast differentiation," 1999, J. of Cell Science 112: 3519-3527
	CE	GENBANK Accession No. AF071079
	CF	GENBANK Accession No. AJ002141
	CG	GENBANK Accession No. E13404
	CH	GENBANK Accession No. L06562
Examiner Signature		
Date Considered	12/14/01	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered.

Include copy of this form with next communication to applicant.



Modified Form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)	Application Number	09/490,801
	Filing Date	February 18, 2000
	First Named Inventor	Hugh S. Keeping
	Group Art Unit	1633
	Examiner Name	J. Kerr
	Attorney Docket Number	21486-028

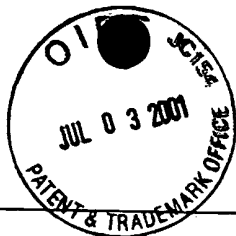
U.S. PATENT DOCUMENTS

Exam Initials	Cite No.	U.S. Patent Document No.	Issue Date	Name of Patentee(s) or Applicant(s)	Class	Sub Class	Filing Date If Appropriate
AK	AG	4,578,376	03/25/86	Rosini et al.	514	108	
	AH	5,830,850	11/3/98	Gelb et al.	514	2	
	AI	5,837,674	11/17/98	Kumagai et al.	514	7	
	AJ	5,364,840	11/15/94	Basava et al.	514	12	
	AK	5,827,735	10/27/98	Young et al.	435	325	
	AL	5,849,287	12/15/98	Greenberger et al.	424	93.21	
	AM	5,766,950	06/16/98	Greenberger et al.	435	397	

OTHER NON PATENT LITERATURE DOCUMENTS

Exam Initials	Cite No.	Name of Author, Title (when appropriate), Publication, Volume, Page(s), Date, Etc.
AK	CI	GENBANK Accession No. M13982
	CJ	Guo et al., "Novel method to Isolate Odontoblasts from Rat Incisor," 2000, Calcified Tissue International 66:212-216
	CK	Hanada et al., "Stimulatory Effects of Basic Fibroblast Growth Factor and Bone Morphogenic Protein-2 on Osteogenic Differentiation of Rat Bone Marrow-Derived Mesenchymal Stem Cells", Journal of Bone and Mineral Research, 1997, Vol. 12 No. 10, pgs. 1606-1614.
	CL	Harada et al., "Cbfa1 Isoforms Exert Functional Differences in Osteoblast Differentiation", The Journal of Biological Chemistry, 12 March 1999, Vol. 274, No. 11, pgs. 6972-6978.
	CM	Higgins et al., "Fast and sensitive multiple sequence alignments on a microcomputer," 1989, CABIOS 5(2): 151-153
	CN	Kruse et al., "Conversion of Human Interleukin-4 Into a High Affinity Antagonist by a Single Amino Acid Replacement", EMBO Journal, vol. 11 no. 9, 9 September 1992, pgs. 3237-3244.
	CO	Kruse et al., "Two Distinct Functional Sites of Human Interleukin 4 Are Identified by Variants Impaired in Either Receptor Binding or Receptor Activation", EMBO Journal, 15 December, 1993, vol.12 no. 13, pgs. 5121-5129.
	CP	Lubberts et al., "Protection Against Cartilage Damage and Bone-Erosion In Collagen-Induced Arthritis By Local Adenoviral Vector-Mediated Interleukin-4 Expression in the Mouse Knee Joint," Sept. 1998, Arthritis & Rheumatism 41 (9 Suppl.), pS246
	CQ	Maher, et al., "Human Interleukin-4 an Immunomodulator With Potential Therapeutic Applications", Progress in Growth Factor Research, vol. 3, no.1, 1991. pgs. 43-56.
	CR	Miossec et al., 1994, Arthritis Rheum., "Interleukin-4 Inhibits Bone Resorption Through An Effect on Osteoclasts and Proinflammatory Cytokines in an Ex Vivo Model of Bone Resorption in Rheumatoid Arthritis" 37: 1715-1722
	CS	Morrison et al., "1,25-Dihydroxyvitamin D-Responsive Elements and Glucocorticoid Repression in the Osteocalcin Gene," 1989, Science 246: 1158-1161
	CT	Okada et al., 1998, Bone, "Short-Term Treatment of Recombinant Murine Interleukin-4 Rapidly Inhibits Bone Formation in Normal and Ovariectomized Mice", 22: 361-5
Examiner Signature		
	Date Considered	12/14/01

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OTHER NON PATENT LITERATURE DOCUMENTS		
Exam Initials	Cite No.	Name of Author, Title (when appropriate), Publication, Volume, Page(s), Date, Etc.
OK	CU	Pesanti et al., 1998 Clin. Orthop., "Osteoclasts and Effects of Interleukin-4 in Developmental of Chronic Osteomyelitis," 355:290-299
	CV	Riancho et al., "Different Effects of Interleukin-4 on Osteoclast Recruitment and Activity," 1993, J. of Bone and Mineral Research, V8, S1 (Aug.), PS385
	CW	Shanafelt et al., "An Immune Cell-Selective Interleukin 4 Agonist," Aug. 1998 Proc. Natl. Acad. Sci. USA vol. 95 pp. 9454-9458
	CX	Shioi et al., "Interleukin 4 Directly Impacts Osteoclasts and Their Progenitors," 1992, J. of Bone and Mineral Research, V7, S1 (Aug, PS308)
	CY	Suzawa et al., "Extra-Cellular Matrix-Associated Bone Morphogenic Proteins Are Essential for Differentiation of Murine Osteoblastic Cells <i>in Vitro</i> ," May 1999, Endocrinology, 2125-2133
	CZ	Tony et al., "Design of Human Interleukin-4 Antagonists in Inhibiting Interleukin-4 -Dependent and Interleukin-13-Dependent Responses in T-Cells and B-Cells With High Efficiency", European Journal of Biochemistry, vol. 225, 1994, pgs. 659-664.
	CAA	Watanabe et al., "Interleukin-4 As A Potent Inhibitor of Bone Resorption," 1990, Biochem. Biophys. Res. Comm. 172:1035-104
	CAB	Yamazaki et al., "Tooth-Specific Expression Conferred by the Regulatory Sequences of Rat Dentin Sialprotein Gene in Transgenic Mice," Biochem Biophys Research Commun 1999 July 5;260(2):433-40
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